



CENTER FOR ADVANCED AVIATION SYSTEM DEVELOPMENT (CAASD)

TARGETS Noise Screen Plug-In

JPDO EWG OSC
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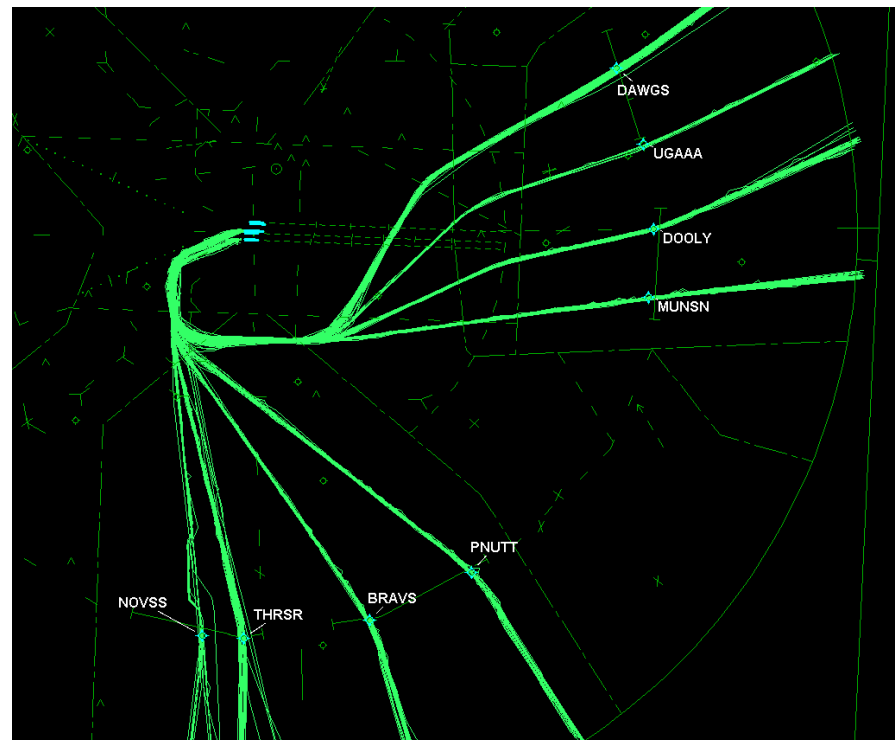
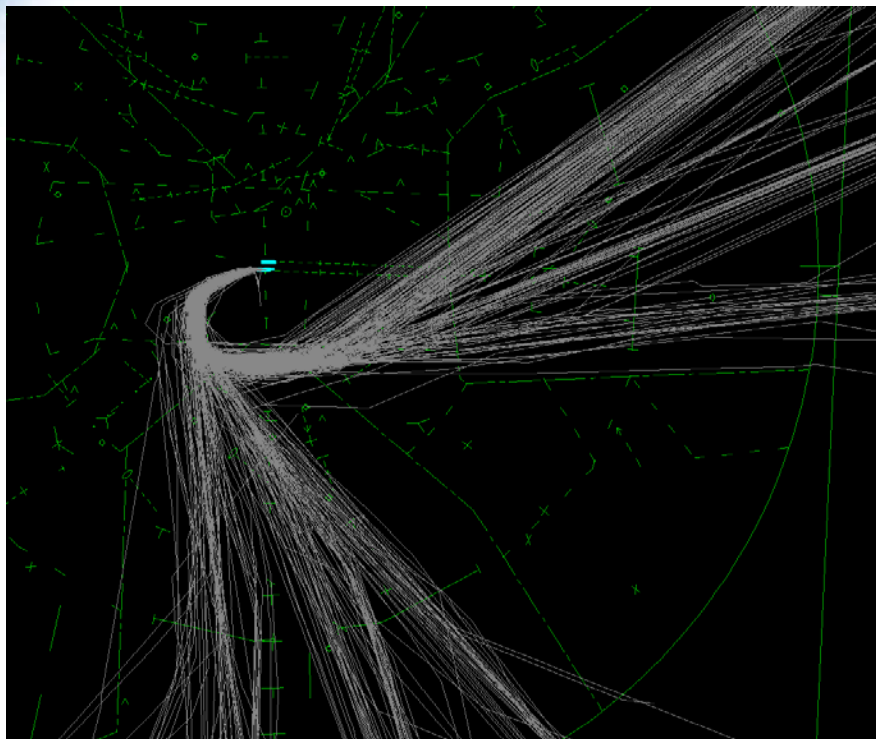


Contents

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Impetus for Change: Reduced RNAV Traffic Dispersion





Three Procedure Policy

- **Specifically addresses RNAV overlays of existing conventional procedures**
- **Asserts that more than three procedure changes at an airport constitutes a change to airport operations**
- **Consider cumulative effects of the air traffic action**
- **Calls for use of noise analysis tool such as Integrated Noise Model (INM) instead of traditional screening models to support CatEx**



TARGETS Noise Plug-in Collaborative Effort

Environmental
SMEs

RNAV/RNP
Office

TARGETS
Developers

MITRE



Air Traffic
Facilities

RNAV
Procedures
Team

Environmental
Programs
Office



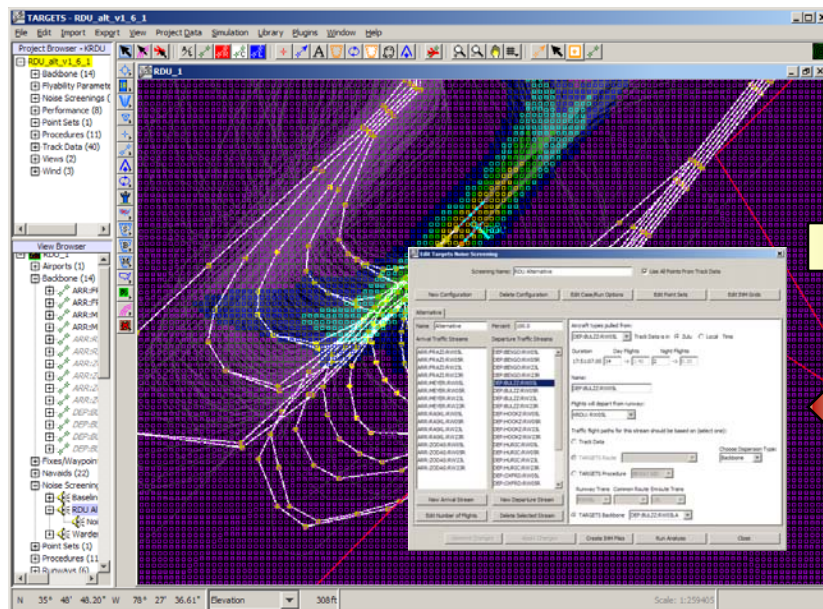
Purpose

- **Streamline noise screening of procedures to satisfy requirements of the Three Procedure Rule**
- **Anciliary benefits**
 - **Provides a tool to improve the procedure design process by identifying potential noise impacts before finalizing a procedure or set of procedures**



TARGETS Noise Plug-in

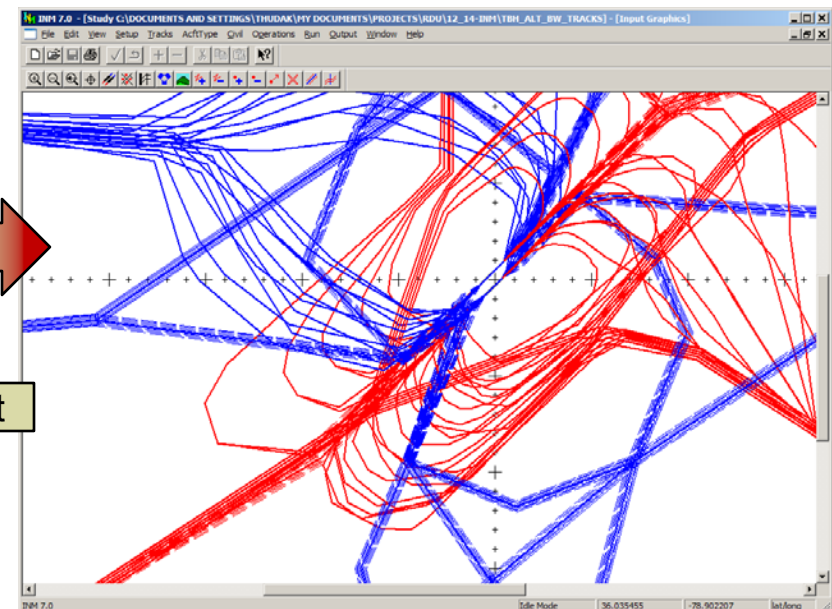
- TARGETS Operator generates scenarios
- INM processes in the background
- TARGETS displays point data



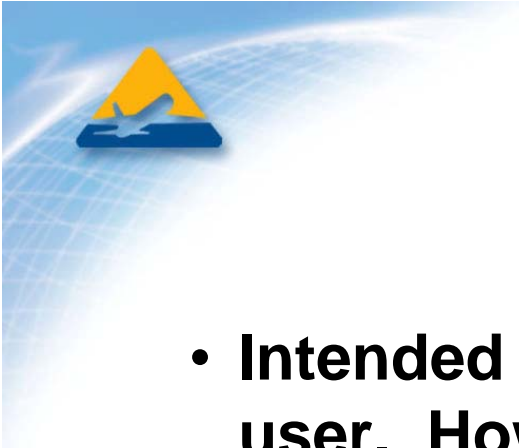
TARGETS

Input

Output

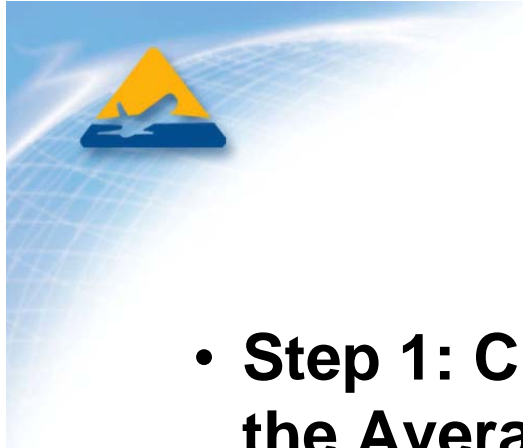


INM 7.0 (Background)



Beyond the Tool

- **Intended for use by the experienced TARGETS user. However, requires familiarity with:**
 - **NEPA and FAA Order 1050.1**
 - **Noise analysis concepts**
 - **Best practices for manipulating data**
 - **Interpreting the results**
- **Some level of automation improves accuracy of results**



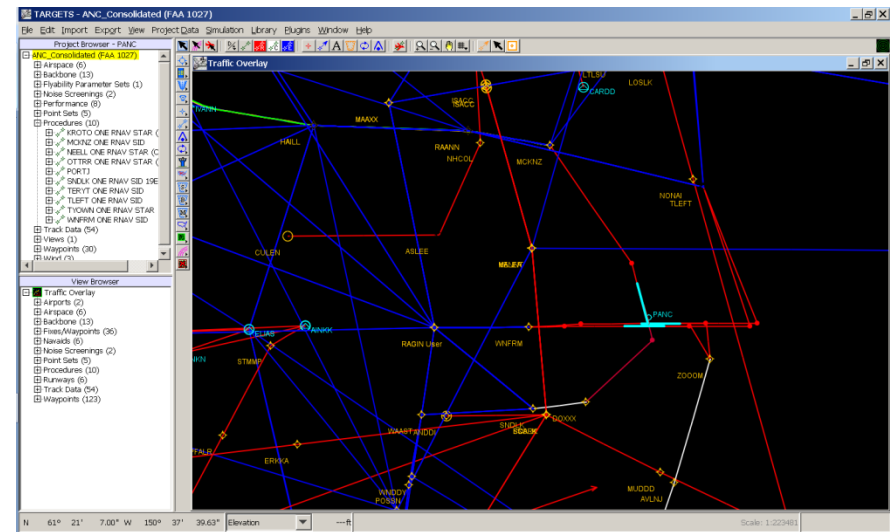
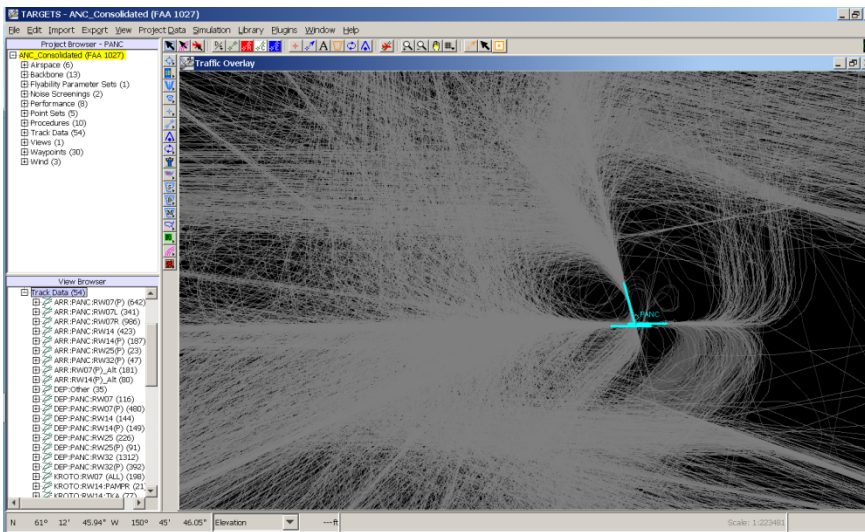
Methodology

- **Step 1: Create a “Baseline” scenario that models the Average Annual Day for the existing air traffic environment.**
- **Step 2: Create an “Alternative” scenario that represents an AAD for the proposed air traffic action.**
- **Step 3: Compare the difference between the Baseline and Alternative scenario absolute noise levels against a defined noise threshold criteria to determine if additional analysis/mitigation is needed.**

Basic Tools

NOP Radar Track Data

TARGETS Procedures

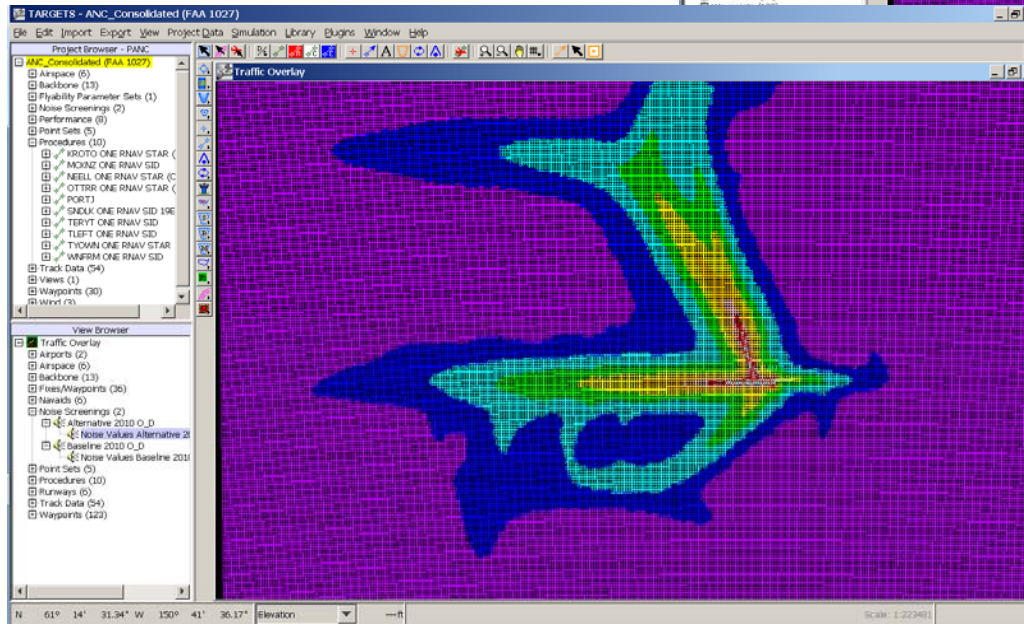
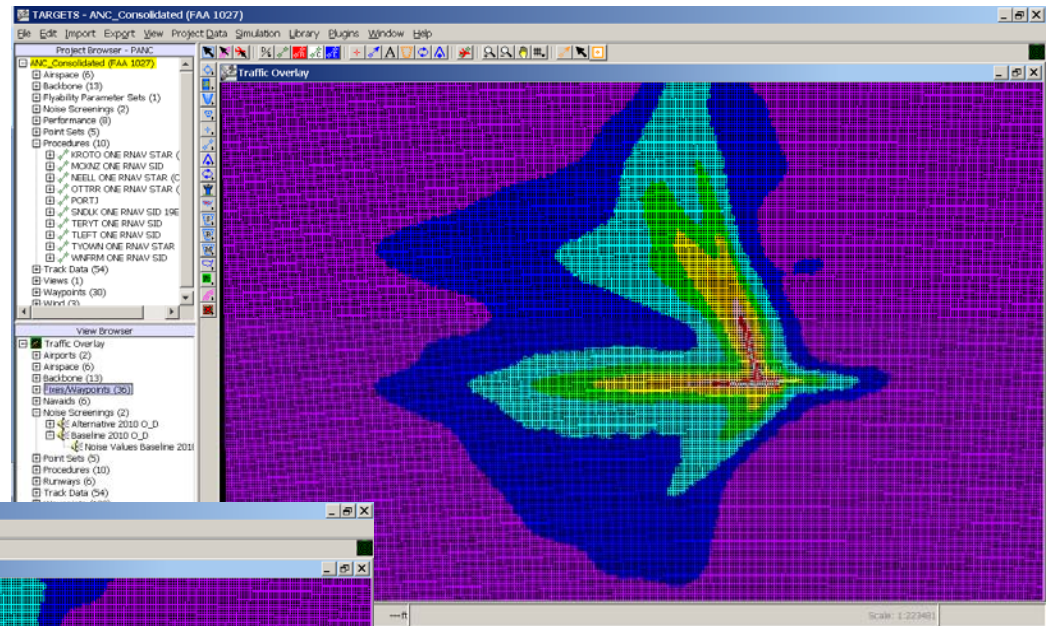


- ETMS Traffic Counts
- Facility Runway Usage



Generate Output

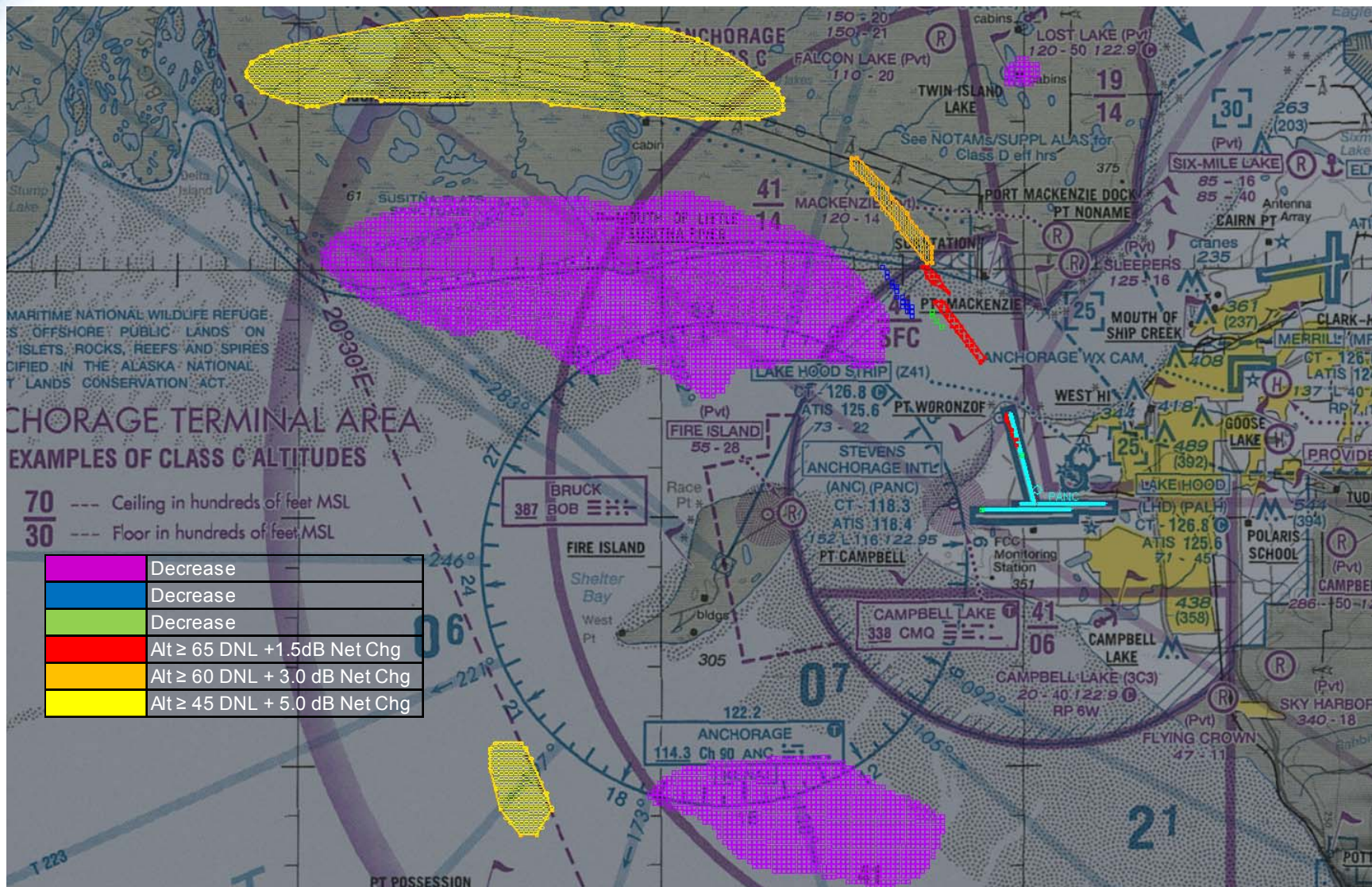
Baseline: Model of existing traffic scenario.



Alternative: Model of proposed air traffic action.



Overlay Results for Review by Environmental Specialist





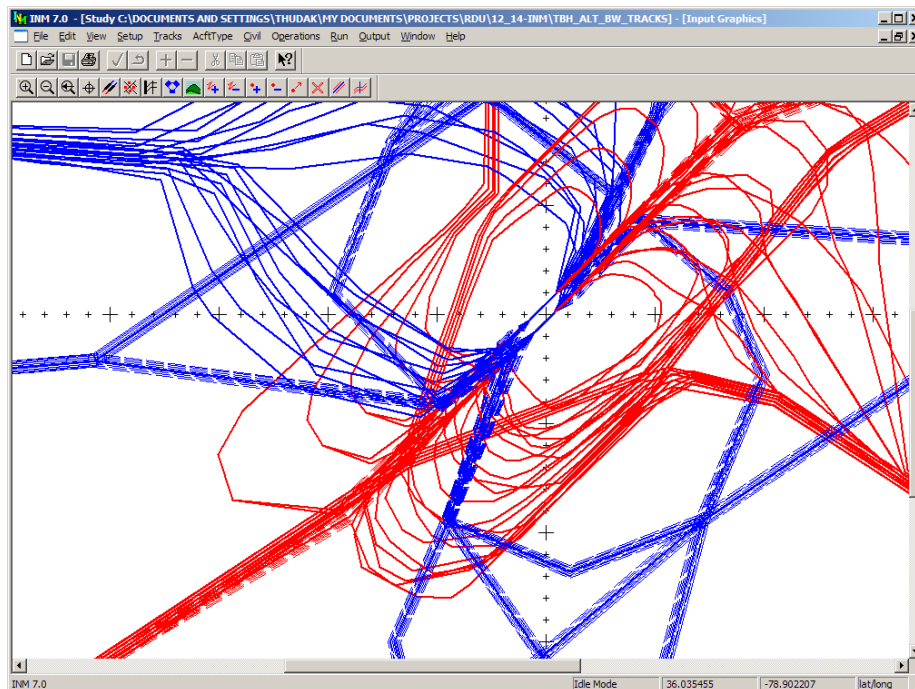
Noise Screen Results (Noise Increases w/ Satellite Imagery)





Detailed Analysis

- INM input/output exists for detailed review by an Environmental Specialist, if necessary
- Provides further substantiation of the results



- Helpful to identify underlying contributors to noise that may not be obvious in the TARGETS output



Average Annual Day Challenge

- Automated Average Annual Day (AAD) construction tool
 - Using runway use data, ETMS flight counts, and day/night flight ratios from radar track data, TARGETS will build a complete baseline AAD.
 - Eliminates the need for complex spreadsheet
 - Reduces errors from human manual entry
 - Saves hours of manual preparation time

ETMS Jet Traffic Counts		
Totals	Arrivals	Departures
Total (yr)	0.0	0
Total (day)	225.0	229.0

Facility Runway Usage Data		
Runway	% Arrivals	% Departures
RW05L	23.0	23.0
RW05R	25.0	25.0
RW14	0.0	0.0
RW23L	25.0	25.0
RW23R	27.0	27.0
RW32	0.0	0.0

Buttons: Create Baseline Screening, Cancel



Screening Name: Baseline ☒ Use All Points From Track Data

Buttons: New Configuration, Delete Configuration, Edit Case/Run Options, Edit Point Sets

Config1

Name: Config1 Percent: 100.0

Arrival Traffic Streams

- ARR:FRAZI:RW05L
- ARR:FRAZI:RW05R
- ARR:FRAZI:RW23L
- ARR:FRAZI:RW23R
- ARR:MEYER:RW05L
- ARR:MEYER:RW05R
- ARR:MEYER:RW23L
- ARR:MEYER:RW23R
- ARR:RASKL:RW05L
- ARR:RASKL:RW05R
- ARR:RASKL:RW23L
- ARR:RASKL:RW23R
- ARR:70DAS:RW05L

Departure Traffic Streams

- DEP:BEXGO:RW05L
- DEP:BEXGO:RW05R
- DEP:BEXGO:RW23L
- DEP:BEXGO:RW23R
- DEP:BULZZ:RW05L
- DEP:BULZZ:RW05R
- DEP:BULZZ:RW23L
- DEP:BULZZ:RW23R
- DEP:HOOKZ:RW05L
- DEP:HOOKZ:RW05R
- DEP:HOOKZ:RW23L
- DEP:HOOKZ:RW23R
- DEP:HIRTC:RW05L

Buttons: New Arrival Stream, New Departure Stream, Edit Number of Flights, Delete Selected Stream

Buttons: Remove Changes, Apply Changes, Create INM Files, Run Analysis, Close



Limitations

- **No terrain analysis capability**
- **Standard 3.0 deg descent glidepath**
- **No procedure altitude constraints**
- **Irregular flight paths**
 - **Multiple go-arounds of the same aircraft track**
 - **Radar quality issues**



Status

- **Three FAA contractors have been trained to use the tool**
- **Completed several analyses which resulted in Categorical Exclusions (case-by-case approval)**
- **TARGETS Noise Plug-in:**
 - **All major components implemented and stable**
 - **Continued improvements to improve:**
 - **Computation time**
 - **Volume of track data (near and mid term)**
 - **Developing supporting documentation and training materials**
- **Ultimately tech-transfer to FAA**



Questions/Comments